

REMARKS

Claims 1-44, 46-67, and 69-88 are pending in the application. Claims 2-15, 17-19, 23-25, 29-31, 35-48, 52-54, 75-77 and 80-83 have been objected to because of informalities. Claims 1-33 and 74-78 have been rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential elements. Claims 34-44, 46-67, and 79-88 were rejected under § 112 ¶ 2 as being incomplete for omitting essential steps. Claims 2, 4, 6-7, 11-15, 35, 37, 39-40, 42, 44, 46-48, 74-77, and 80-82 have been rejected under 35 U.S.C. § 102(b) over European Patent No. 0751490A2 to Hayata ("Hayata"). Claims 20-21, 26-27, 32-33, 49-50, 55-56, and 72-73 have been rejected under § 102(e) over U.S. Patent No. 6,202,046 to Oshikiri ("Oshikiri"). Claims 1, 22, 28, 34, 51, 57, 74, 78-79, 83-84, and 88 have been rejected under 35 U.S.C. § 103(a) over Oshikiri in view of Hayata. Claim 16 has been rejected under § 103(a) over Oshikiri in view of Hayata and further in view of U.S. Patent No. 5,960,389 to Jarvinen et al ("Jarvinen"). Claims 17-19 have been rejected under § 103(a) Hayata in view Jarvinen. Claims 3, 5, 8-10, 23-25, 29-31, 36, 38, 41, 43, 52-54, 58-67, 69-71, and 85-87 have been rejected under § 103(a) over Hayata in view of Oshikiri.

In paragraph 7 of the Final Office Action, claims 2-15, 17-19, 23-25, 29-31, 35-48, 52-54, 75-77 and 80-83 have been objected to because of informalities. Specifically the claims were objected to for the phrase "the past." This phrase has been deleted from the claims and withdrawal of the objection to these claims is respectfully requested.

In paragraphs 9 and 10 of the Final Office Action Claims 1-44, 46-67 and 74-88 were rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential elements. The Final Office Action asserts that the claims are missing a means or a step for determining/detecting the presence of a voiceless period. Without conceding the propriety of this rejection, and in order to further prosecution, Applicant has amended the independent claims to include the circuit or act that detects the voice or voice-less

periods. Withdrawal of the rejection of claims 1-44, 46-67 and 74-88 § 112 ¶ 2 is therefore respectfully requested.

Claims 2, 4, 6-7, 11-15, 35, 37, 39-40, 42, 44, 46-48, 74-77, and 80-82 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Hayata. Claims 2, 4, 6, 35, 37 and 39 are independent claims. Applicant respectfully traverses this rejection.

As amended, claims 2, 4, 6, 35, 37, and 39 recite, *inter alia*, smoothing at least one of the feature parameters “by mixing the feature parameters received over a period of a plurality of preceding frames.” Hayata does not disclose or suggest this limitation.

In contrast to the present invention as recited in claims 2, 4, 6, 35, 37, and 39, Hayata's apparatus only uses the latest parameter of one frame stored in the second parameter memory 104 to decode frames in a voice-less period. Specifically, the synthesis filter coefficient generation unit 106 supplies the synthesis filter coefficient according to only the latest parameter to both of the synthesis filter 110 and the smoothed filter coefficient generation unit 108. The synthesis filter 110 produces the background noise according to the synthesis filter coefficient. The smoothed filter coefficient generation unit 108 produces the smoothed filter coefficient which is defined as the “inverse characteristics of the synthesis filter coefficient generated by the synthesis filter coefficient generation unit 106”. The smoothed filter coefficient is used to perform a filtering process for the background noise and to produce the smoothed background noise as a decoded signal. Thus, Hayata's apparatus decodes the frames in the voice-less period using only the latest parameter of one frame. Hayata does not teach or suggest that feature parameters of plural frames are smoothed in time direction as required by claims 2, 4, 6, 35, 37, and 39.

Though Hayata discloses that the strength of the inverse characteristics of the smoothed filter coefficient is controlled in each frame in accordance with a value of the frame counter 108a, the smoothed filter coefficient is based on only the latest parameter of a single preceding frame. This is quite different from the present invention as recited in claims 2, 4, 6, 35, 37, and 39 in which feature parameters of plural frames are smoothed in time direction.

For at least the foregoing reason, claims 2, 4, 6, 35, 37, and 39 are patentable over Hayata. Dependent claims 5-7, 11-15, 40, 42, 44, 46-48, 74-77, and 80-82, which depend from these patentable independent claims are likewise patentable over Hayata at least by virtue of their dependence. Withdrawal of the rejection of claims 2, 4, 6-7, 11-15, 35, 37, 39-40, 42, 44, 46-48, 74-77, and 80-82 on the basis of Hayata is therefore respectfully requested.

Claims 20-21, 26-27, 32-33, 49-50, 55-56, and 72-73 have been rejected under § 102(e) over Oshikiri. Claims 20, 21, 49, 50, 72, and 73 are independent claims. Applicant respectfully traverses this rejection.

Claim 20 requires determining a "weighting coefficient used in a weighted sum operation...according to feature parameters from a plurality of preceding frames." In claim 21, the weighting coefficient is determined according to "at least one smoothed feature parameter obtained by smoothing a plurality of feature parameters received in preceding frames." In claims 49 and 72, the weighting coefficient is "based on a plurality of received feature parameters from preceding frames." Claim 50 and 73 requires "smoothing the received feature parameters over a period of a plurality of preceding frames." None of these similar limitations in these independent claims of determining a weighting coefficient are taught or suggested by Oshikiri.

Oshikiri discloses that the decoded synthesis filter parameter is supplied to the synthesis filter 411. Oshikiri does not disclose or suggest the decoded synthesis filter parameter is smoothed. Specifically, Oshikiri does not teach that the use of a weighting factor that is smoothed using feature parameters that are received in a plurality of preceding frames.

In marked contrast to Oshikiri, the present invention as recited in the above described claims uses a smoothes its feature parameters received over a plurality of preceding frames when determining its weighting coefficient. In other words, the present invention as recited in these claims uses not only the latest feature parameters but previous feature parameters.

For at least the foregoing reasons, claims 20, 21, 49, 50, 72, and 73 are patentable over Oshikiri. By virtue of their dependence on either claim 20, 21, 49, 50, 55, 56, 72, and 73, claims 26, 27, 32,33, 55, 56, 83, and 88 are also patentable over Oshikiri. Withdrawal of the rejection of Claims 20-21, 26-27, 32-33, 49-50, 55-56, and 72-73 on the basis of Oshikiri is therefore respectfully requested.

Claims 1, 22, 28, 34, 51, 57, 74, 78-79, 83-84, and 88 have been rejected under § 103(a) over Oshikiri in view of Hayata. Claims 3, 5, 8-10, 23-25, 29-31, 36, 38, 41, 43, 52-54, 58-67, 69-71, and 85-87 have been rejected under § 103(a) over Hayata in view of Oshikiri. Claims 1, 34, 57, 58, 60 and 62 are independent claims. Applicant respectfully traverses this rejection.

Claims 1 requires "smoothing said feature parameter for spectral envelope characteristics over a period of a plurality of preceding frames." Claims 34, 57, 58, 60 and 62 require "said smoothing including feature parameters received a plurality of preceding frames." Neither Oshikiri nor Hayata teaches these limitations of claims 1, 34, 57, 58, 60 and 62.

As discussed above with respect to the other independent claims, the claimed invention uses smoothed feature parameters, which are obtained by smoothing feature parameters over a plurality of preceding frames. Oshikiri does not teach smoothing at all and Hayata only uses the feature parameter from a single immediately preceding frame.

For at least these reasons, claims 1, 34, 57, 58, 60 and 62 are patentable over Oshikiri in view of Hayata or Hayata in view of Oshikiri. At least by virtue of their dependence on these claims, dependent claims 3, 5, 8-10, 22-25, 28-31, 36, 38, 41, 43, 51-54, 58-67, 69-71, 74, 78-79, and 83-88 are also patentable over Oshikiri in view of Hayata or Hayata in view of Oshikiri. Withdrawal of the rejection of claims 1, 22, 28, 34, 51, 57, 74, 78-79, 83-84, and 88 on the combination of Oshikiri and Hayata is therefore respectfully requested.

Claim 16 has been rejected under § 103(a) over Oshikiri in view of Hayata and further in view of U.S. Patent No. 5,960,389 to Jarvinen et al ("Jarvinen"). Applicant respectfully traverses this rejection.

Claim 16 is dependent upon claim 1 and includes all of the limitations thereof. Jarvinen does not teach "smoothing said feature parameter for spectral envelope characteristics over a period of a plurality of preceding frames." Thus for the reasons stated above with respect to independent claim 1, claim 16 is patentable over the combination of Oshikiri, Hayata and Jarvinen and withdrawal of this rejection is respectfully requested.

Claims 17-19 have been rejected under § 103(a) Hayata in view Jarvinen. Applicant respectfully traverses this rejection. Claims 17, 18 and 19 are respectively dependent upon independent claims 2, 4 and 6 and thus include all of the limitations thereof. Jarvinen does not cure the deficiencies of Hayata as discussed above with

respect to claims 2, 4 and 6. Accordingly, claims 17-19 are patentable over the combination of Hayata and Jarvinin for the reasons explained above in regard to claims 2, 4 and 6 and withdrawal of this rejection is respectfully requested.

In view of the above amendments, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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